

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) An audience state estimation system comprising:

imaging device for imaging an audience and generating a video signal relative to the audience thus imaged;

movement amount detection device for detecting a movement amount of said audience based on a flesh-color area which is extracted from said video signal, the flesh-color area identifying flesh color; and

estimation device for estimating an audience state based on a comparison result of said movement amount and a predetermined reference level.
2. (Original) The audience state estimation system according to claim 1, wherein said movement amount detection device determines movement vectors of the imaged audience based on said video signal, and wherein an average movement amount showing an average of magnitudes of the movement vectors is set as the movement amount of said audience.
3. (Original) The audience state estimation system according to claim 2, wherein when an area identified based on color information is divided into blocks, the movement vector is determined for each of the blocks.

4. (Original) The audience state estimation system according to claim 1, wherein said movement amount detection device determines movement vectors of the imaged audience based on said video signal and calculates an average movement amount showing an average of magnitudes of the movement vectors, and wherein a time macro movement amount is set as the movement amount of said audience, said time macro movement amount being an average of the average movement amounts in a time direction thereof.

5. (Previously Presented) The audience state estimation system according to claim 1, wherein when said movement amount is larger than the predetermined level, said estimation device estimates said audience state to be in any one of states of beating time with the hands and of clapping.

6. (Currently Amended) An audience state estimation system comprising:
imaging device for imaging an audience and generating a video signal relative to the audience thus imaged;
movement periodicity detection device for detecting movement periodicity of said audience based on a flesh-color area which is extracted from said video signal, the flesh-color area identifying flesh color; and
estimation device for estimating an audience state based on a comparison result of the movement periodicity of said audience and a predetermined reference level.

7. (Original) The audience state estimation system according to claim 6, wherein said movement periodicity detection device determines movement vectors of the imaged audience based on said video signal, calculates an average movement amount showing an average of magnitudes of the movement vectors, and detects an autocorrelation maximum position of the average movement amount, and wherein variance of the autocorrelation maximum position is set as said movement periodicity.

8. (Original) The audience state estimation system according to claim 7, wherein the variance is calculated using a signal in a frame range, said frame range being decided on the basis of the periodicity of said audience state to be estimated.

9. (Original) The audience state estimation system according to claim 6, wherein said movement periodicity detection device determines movement vectors of the imaged audience based on said video signal, and calculates an average movement amount showing an average of magnitudes of the movement vectors, and wherein a ratio of low-frequency component in the average movement amount is set as said movement periodicity.

10. (Original) The audience state estimation system according to claim 9, wherein a frequency range of the low-frequency component is decided according to the periodicity of the said average movement amount transformed to a frequency region to be detected.

11. (Previously Presented) The audience state estimation system according to claim 6, wherein said estimation device estimates said audience state to be in a state of beating time with the hands when said movement periodicity is larger than the predetermined level, and estimates said audience state to be in a state of clapping when said movement periodicity is not larger than said predetermined level.

12-28. (Canceled)

29. (Currently Amended) An audience state estimation system comprising:
input device for inputting and generating at least one of video signal obtained by imaging an audience and audio signal obtained according to sound from said audience;
characteristic amount detection device for detecting, based on a flesh-color area which is extracted from said video signal, at least one of a movement amount and movement periodicity of said audience, the flesh-color area identifying flesh color, and for detecting, based on said audio signal, a piece of information on at least one of a volume of sound from said audience, periodicity of said sound, and a frequency component of said sound; and
estimation device for estimating an audience state based on a comparison result of the detected result of said characteristic amount detection device and a predetermined reference level.

30. (Original) The audience state estimation system according to claim 29, wherein said sound from the audience includes voice.

31. (Currently Amended) An audience state estimation method comprising:
imaging an audience and generating a video signal relative to the audience thus
imaged;

detecting a movement amount of said audience based on a flesh-color area which
is extracted from said video signal, the flesh-color area identifying flesh color; and

estimating an audience state based on a comparison result of said movement
amount and a predetermined reference level.

32. (Original) The audience state estimation method according to claim 31,
wherein movement vectors of the imaged audience are determined on the basis of said video
signal, and wherein an average movement amount showing an average of magnitudes of the
movement vectors is set as the movement amount of said audience.

33. (Original) The audience state estimation method according to claim 31,
wherein movement vectors of the imaged audience are determined based on said video signal,
and an average movement amount showing an average of magnitudes of the movement vectors is
calculated, and wherein a time macro movement amount is set as the movement amount of said
audience, said time macro movement amount being an average of the average movement
amounts in the time direction thereof.

34. (Previously Presented) The audience state estimation method according to claim 31, wherein when said movement amount is larger than the predetermined level, said audience state is estimated to be in any one of states of beating time with the hands and of clapping.

35. (Currently Amended) An audience state estimation method comprising:
imaging an audience and generating a video signal relative to the audience thus imaged;

detecting movement periodicity of said audience based on a flesh-color area which is extracted from said video signal, the flesh-color area identifying flesh color; and
estimating an audience state based on a comparison result of the movement periodicity of said audience and a predetermined reference level.

36. (Original) The audience state estimation method according to claim 35, wherein movement vectors of the imaged audience are determined on the basis of said video signal, an average movement amount showing an average of magnitudes of the movement vectors is calculated, and an autocorrelation maximum position of the average movement amount is detected, and wherein variance of the autocorrelation maximum position is set as the movement periodicity.

37. (Original) The audience state estimation method according to claim 35, wherein movement vectors of the imaged audience are determined on the basis of said video

signal, and an average movement amount showing an average of magnitudes of the movement vectors is calculated, and wherein a ratio of low-frequency component in the average movement amount is set as said movement periodicity.

38. (Previously Presented) The audience state estimation method according to claim 35, wherein when said movement periodicity is larger than the predetermined level, said audience state is estimated to be in a state of beating time with the hands, and when said movement periodicity is not larger than said predetermined level, said audience state is estimated to be in a state of clapping.

39-54. (Canceled)

55. (Currently Amended) An audience state estimation method comprising:
generating any one of a video signal obtained by imaging an audience and an audio signal according to sound from said audience;

detecting, based on a flesh-color area which is extracted from said video signal, at least one of a movement amount and movement periodicity of said audience, the flesh-color area identifying flesh color;

detecting, based on said audio signal, a piece of information on at least one of a volume of sound from said audience, periodicity of said sound, and a frequency component of said sound; and

estimating an audience state based on a comparison result of said detected result and a predetermined reference level.

56. (Original) The audience state estimation method according to claim 55, wherein said sound from the audience includes voice.

57. (Currently Amended) A computer-readable medium storing an audience state estimation program for estimating an audience state by processing information, said program comprising:

a step of performing any one of detection, based on a flesh-color area which is extracted from said video signal obtained by imaging the audience, for at least one of a movement amount and movement periodicity of said audience, the flesh-color area identifying flesh color, and detection, based on said audio signal according to sound from said audience, for a piece of information on at least one of a volume of sound from said audience, periodicity of said sound, and a frequency component of said sound; and

a step of estimating the audience state based on a comparison result of said detected result and a predetermined reference level.

58. (Previously Presented) The program according to claim 57, wherein said sound from the audience includes voice.